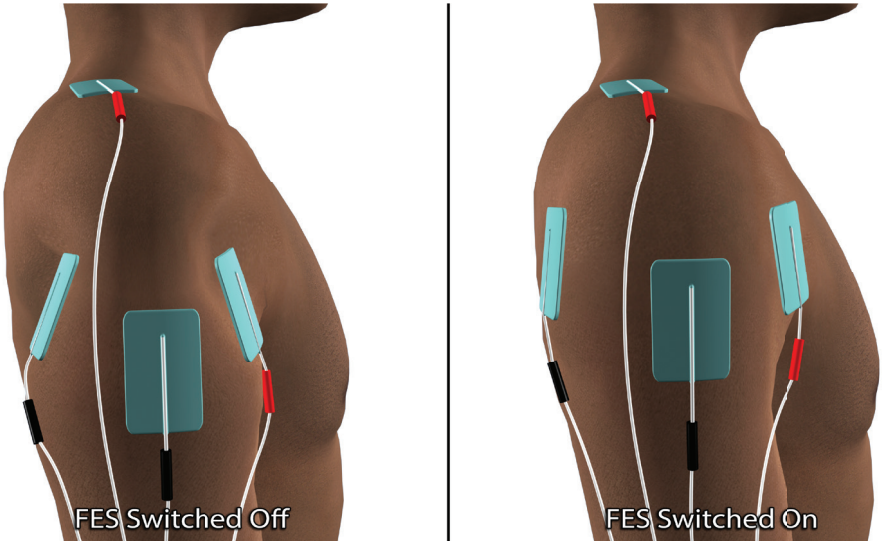
FES & Shoulder Subluxation

OML | Leading FES Rehabilitation

What is Functional Electrical Stimulation (FES)?

FES is a non-invasive treatment which uses small electrical impulses to activate weak or paralysed muscles by stimulating the nerve. Self–adhesive patches (electrodes) are placed on the skin close to the nerve supplying the muscle. Leads connect the electrodes to a stimulator which produces the impulses.



Shoulder subluxation is a common problem following stroke. It occurs when there is a loss of voluntary control of the muscles around the shoulder. The weight of the arm pulls on the ligaments around the shoulder, gradually stretching the tissues. Additionally spasticity may pull the humerus into an abnormal position. Shoulder subluxation is frequently associated with pain and restricted passive range of movement.

What our FES users say...

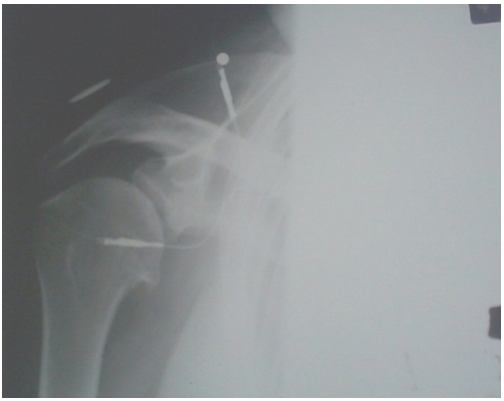
"taking this technology home was a real gift to me, I had my life back."

Use of FES with Shoulder Subluxation

Shoulder subluxation can be identified by an extension in the gap between the acromion bone (part of the scapula) and the top of the humerus bone.

Electrical stimulation can be used to strengthen the muscles around the shoulder, leading to a reduction in subluxation and associated pain. Electrodes are placed on the supraspinatus and deltoid muscles. Stimulation causes a muscle contraction, lifting the humerus bone back into the glenohumeral shoulder socket.

Shoulder X-ray with stimulation turned off



Shoulder x-ray with stimulation turned on.

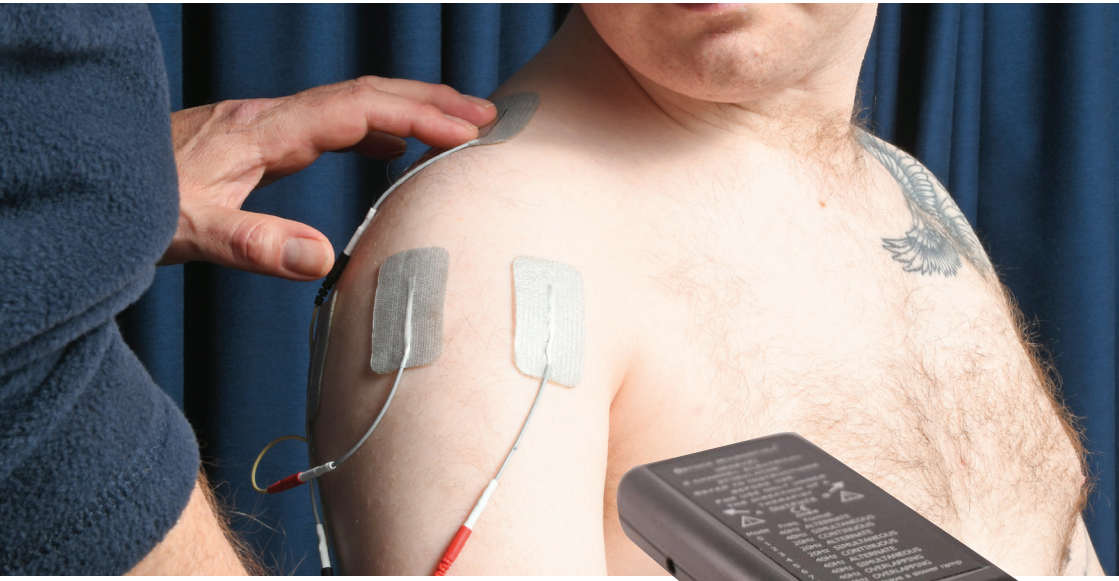
Studies have shown that regular use of electrical stimulation can prevent or reduce symptoms of subluxation and in particular reduce shoulder pain1. Electrical stimulation has been recognised as an effective treatment for shoulder subluxation in the RCP and SIGN guidelines[2, 3].

References

1. Ada L, Foongchomcheay A. Efficacy of electrical stimulation in preventing or reducing subluxation of the shoulder after stroke: a meta-analysis. Aust J Physiother 2002;48(4):257-67.

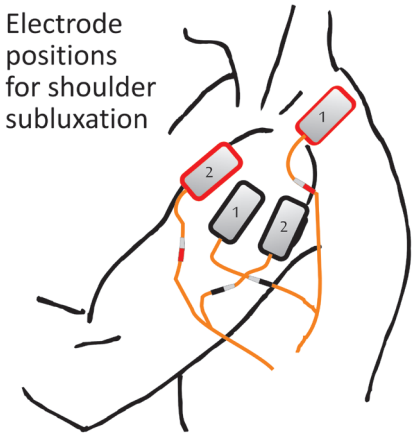
2. Intercollegiate Stroke Working Party. National Clinical Guideline for Stroke, 4th edition London: Royal College of Physicians 2012. ISBN 9781860164927 http://www.rcplondon.ac.uk/resources/stroke-guidelines

3. SIGN118. Management of patients with stroke: Rehabilitation, prevention and management of complications, and discharge planning A national clinical guideline http://www.sign.ac.uk/guidelines/fulltext/118/index.html



The Microstim 2V2 exercise stimulator provides two modes, specifically for shoulder stimulation. Electrodes are placed over the three sections of the deltoid muscle and also over the supraspinatus muscle.

The first pair of muscles are stimulated, causing the humerus to rise. Before the stimulation ends, the second pair of muscles are stimulated. Their action is to hold the humerus in place. The sequence then repeats. In this way the position of the joint is maintained without causing muscle fatigue to either muscle.



The Microstim 2V2 is used at home on a daily basis building up over a period of 4 weeks to two periods of 30 minutes. A reduction in symptoms is typically seen after 6 weeks or so. Long term management of the subluxation may require continued treatment.

How do I access treatment?

A referral is required from a GP or healthcare professional.
Self-referrals can be made for self-funded treatment.

Inclusion criteria summary

- Shoulder subluxation due to stroke, cerebral palsy, head injury, multiple sclerosis, spinal cord injury or other upper motor neurone injury
- Pain in the shoulder and arm

Exclusion criteria summary

- Shoulder subluxation due to nerve or brachial plexus injury
- Cardiac pacemaker, or other active medical implanted devices
- Epilepsy not controlled by medication
- Pregnancy or planned pregnancy
- Cancer in the area of the body that is being stimulated

What are the possible disadvantages and risks of FES?

There are no known serious side effects from using FES and most people find it comfortable to use. Rarely, some people may experience minor skin irritation which can usually be easily resolved.

Is FES for shoulder subluxation funded by the NHS?

FES is a SIGN recommended treatment and funded in in some but not all parts of the UK. A funding application may be required. Treatment can also be privately funded.

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